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Reviews and Notes on Literature.

Introduction to Botany. V. M. Spalding, Professor of Botany in the University of Michigan. (Small 8vo. pp. 246, Boston and New York, D. C. Heath & Co., 1893).

Teachers of botany, both in colleges and preparatory schools, have for a long time felt the need of some improvement in the methods of preparatory work. Botany, as it is at present taught in the great majority of preparatory schools, is too much of a cut-and-dried subject; and the student, when he has completed the regulation twenty weeks' course, feels that he has completed the subject as well, and enters college with the idea that the study of botany means learning the shapes of leaves and pressing plants. He has hardly had a glimpse at the structure, the physiology, or the relationship of the plant whose Latin name he has tried in vain to memorize; and as for plants that do not bear flowers he may not know of their existence, below the ferns.

The University of Michigan has recently made botany one of the requisites of preparation for the courses in the Literary Department. But the inevitable trouble of poor preparation arose, and to meet this need Prof. Spalding has issued a text-book, which covers the ground that, in his opinion, should be gone over in the high school. It is the product of a long experience in teaching, both in high school and college, and its author has for some time had the advantage of putting his methods to a practical test.

The book is primarily designed to teach the student to study nature for himself, and to do this the author makes use of the laboratory method. The chapters on organography include most of the subjects treated of in Gray's Lessons, and something of the structure of the different organs as well, but they are guides to laboratory study rather than descriptions and classifications of organs.

The systematic part is even more of a departure from the ordinary methods than the morphological. The student is introduced to some of the important families by a careful study of one or more species; he is then expected to compare this species with others of different genera, and so gain a conception of the family.

Plant analysis, in the sense of tracing the name by means of an artificial key, is not included, but the student who has gone through with the work laid out will be able to use Gray's Manual with perfect ease, and in most cases will know the order of a plant even without its use. There are several chapters which give a slight insight into the cryptogamic orders. In order to follow them all the compound microscope will be needed.

The book is not intended to supplant but to supplement others. On nearly every page the student is referred to other text-books, and it will be impossible for him to carry out the author's design without a knowledge of Gray's Lessons and some acquaintance with Darwin and Müller. If it can be adopted in our high schools it will give new life to the beginning of botanical study. The principal drawbacks to its use will be in finding high school teachers who are capable of carrying it out, and schools that are able and willing to incur the expense of fitting up a laboratory. E. A. S.

Botany of the Death Valley Expedition.—A Report on the Botany of the Expedition sent out in 1891 by the United States Department of Agriculture to make a Biological Survey of the region of Death Valley, California. Frederick Vernon Coville. (Contrib. U. S. Nat. Herb. Vol. 4, 318 pages, 21 plates and a map. Washington, 1893).

"In 1886 and subsequent years appropriation was made by Congress for a study of the geographic distribution of animals, to be conducted by the Division of Ornithology and Mammalogy, United States Department of Agriculture. In the year 1890 the scope of the work was enlarged by act of Congress so as to include the distribution of plants as well as animals, and in accordance with this provision the writer was temporarily detailed from the Division of Botany as botanist of the Death Valley Expedition, the first of the biological surveys under the new act."

The foregoing extract from Mr. Coville's preface indicates the origin of the fine piece of work now so successfully accomplished. The subject-matter is presented under the following heads: (1.) Itinerary. (2.) Principles of plant distribution. (3.) Distribution of plants in Southeastern California. (4.) Characteristics and adaptations of the desert flora. (5.) Catalogue of species. (6.) Catalogue of specimens. (7.) Bibliography. The principles of nomenclature recommended by the Botonical Club of the American Association for the Advancement of Science have been followed. The whole number of species and varieties recorded is 1,261, 42 of which are new to Science. Some of these have previously been described by Mr. Coville in a paper published in the Proceedings of the Biological Society of Washington ;* those here first described are *Aquilegia pubescens*, *Ceanothus pinetorum*, *Lotus Argensis*, *Astragalus eremicus* Sheldon, *Astragalus Inyoensis* Sheldon, *Astragalus Panamintensis* Sheldon, *Astragalus Virgineus* Sheldon, *Gayophytum eriospermum*, *Œnothera xylocarpa*, *Cymopterus Panamintensis* Coulter and Rose, *Phlox austromontana*, *Navarretta setiloba*, *Nemophila spathulata*, *Phacelia hispida brachyantha*, *Cryptanthe recurvata*, *Mohavea breviflora*, *Pentstemon fruticiformis*, *Boerhavia annulata*, *Atriplex Tularensis*, *Eriogonum brachyanthum*, *Eriogonum nivale*, *Phyllogonum luteolum*, *Juncus orthophyllus*, *Ephedra viridis*, *Uromyces bicolor* Ellis and *Phleospora Biglovicæ* Ellis.

Two new genera are proposed : *Orechænactis*, based on *Chænactis thysanocarpha* A. Gray, in the Compositæ and *Phyllogonum* in the Polygonaceæ, based on a newly-discovered species.

The list of plants collected is enriched by numerous valuable notes on habit, habitat, distribution, additional characterizations, modifications of former descriptions and nomenclature. The plates illustrate many of the new species. They are lithographed and well executed.

Altogether the book is a most important contribution to American botany, and we feel sure that in extending to Mr. Coville our congratulations on its completion that we are but voicing the sentiments of all American botanists. N. L. B.

Contributions to the Life Histories of Plants, No. 9. Thomas Meehan (Proc. Acad. Nat. Sci. Phila. 1893, 289–309).

Mr. Meehan's ninth collection of notes under this caption includes memoranda on a Monœcious Case of *Populus tremuloides ;* Extra-axillary Branching in *Mertensia maritima ;* Dichotomous Branching in *Spergularia media ;* Missing Verticil in *Glaux maritima ;* The Relation between Rythmic Growth and Variety in

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*Vol. 1 : 65–80 (1892).

Citrus Fruits; Morphology of the Stipule in *Comarum palustre*; Fertilization of *Malva rotundifolia;* the Peduncle of *Brunella vulgaris;* Branching of *Euphorbia hypericifolia* and *E. maculata;* Dimorphic Forms of *Lythrum Salicaria;* Structure of Florets in *Bidens bipinnata;* Rythmic Growth in Flowers of *Heliopsis lævis;* Floccose Leaves of *Antennaria plantaginifolia;* Endurance of *Partulaca oleracea;* Early Fertilization of *Scutellaria galericulata* and Fertilization of *Trifolium pratense.*

Enumeratio Myrtacearum Brasiliensium. Hjalmar Kiærskow. 8 vo. pp. 199, tab. 24. Christiania, 1893).

This is an enumeration, with descriptions of many new species, of the Myrtaceæ collected in Brazil by Glaziou, Lund, Mendonca, Raben, Reinhardt, Schenck, Warming and others, and forms the thirty-ninth paper in Professor Warming's contributions to the Botany of Central Brazil. Four hundred and nineteen species are recognized. The author's treatment of the order differs from that of Berg, in Martius' "Flora Brasiliensis," chiefly in the recognition of fewer genera, nearly all of the species proposed by Berg being maintained. The illustrations are made up partly from drawings and partly from reproductions of photographs of herbarium specimens. N. L. B.

Index to Recent Literature relating to American Botany.

Bailey, L. H. Another side of the Nomenclature Question. Erythea **2**: 10–12. 2 Ja. 1894.

Relations of nomenclature to horticulture.

Blochman, Ida M. Californian Herb-lore.—III. Erythea **2**: 9, 10. 2 Ja. 1894.

Saponaceous plants of Southern California.

Davidson, Anstruther. Californian Field Notes.—I. Erythea **2**: 1–2. 2 Ja. 1894.

Notes on *Calochortus.* Reduces *C. Lyoni* to *C. Catalinæ.*

Greene, Edw. L. Correct Nomenclature, etc. Erythea **2**: 12, 13. 2 Ja. 1894.

Greene, Edw. L. Dr. Britton and Mr. Britten and *Jacksonia.* Erythea **2**: 6–9. 2 Ja. 1894.

Maintains *Jacksonia* Raf. in place of *Polanisia* Raf.